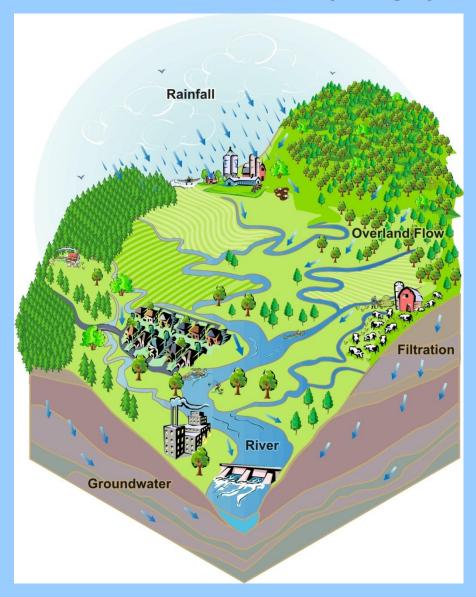
RainScapes Conservation Landscaping



A Residential Stormwater Management Tool

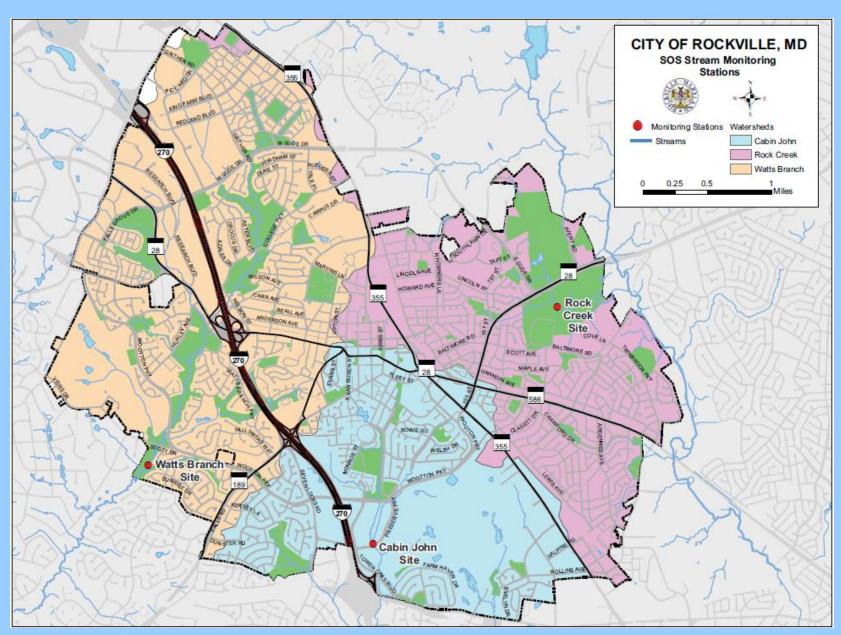


What is a Watershed?



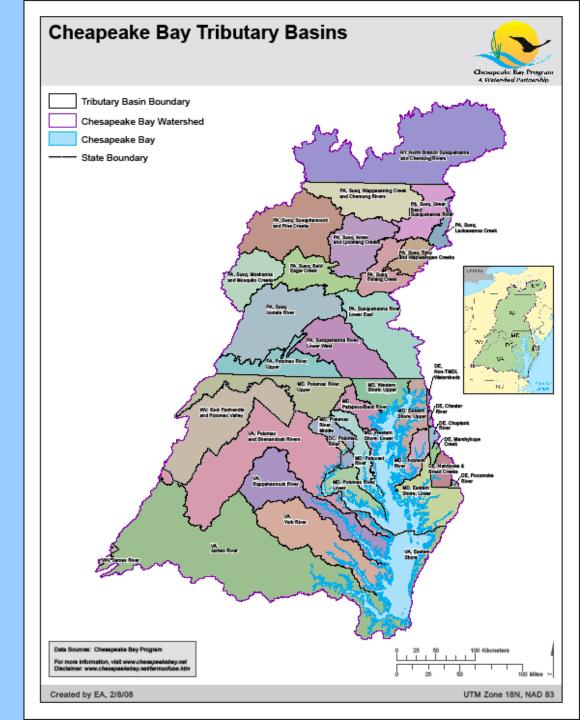
"land area from which all water, and everything carried by that water, flows or drains into a common river, lake, ocean, or other body of water"

Rockville's three watersheds



Rockville's watersheds drain to:

- Potomac River
- Chesapeake Bay



What is stormwater?

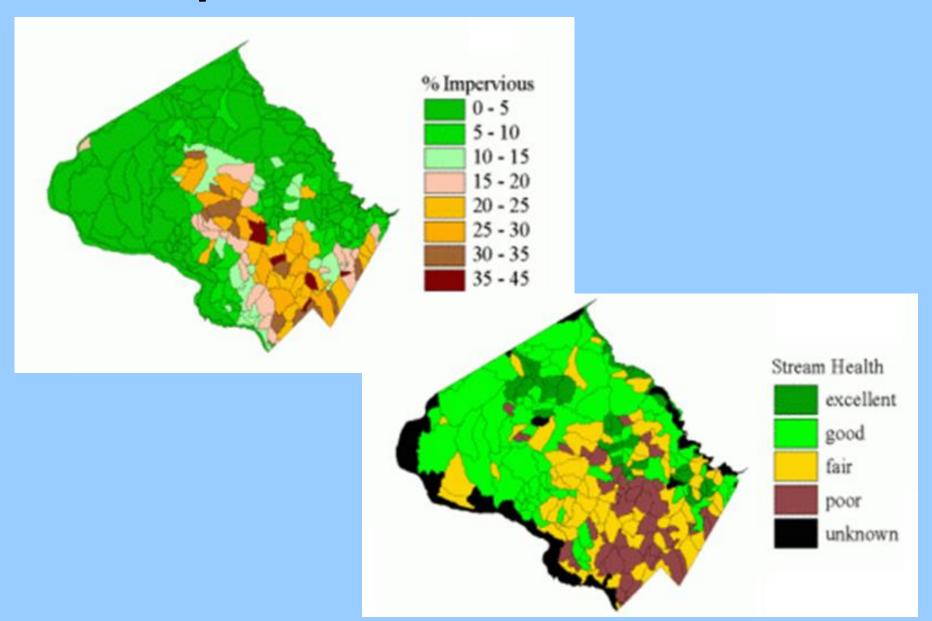








Development effects on stream health



Impacts of stormwater runoff

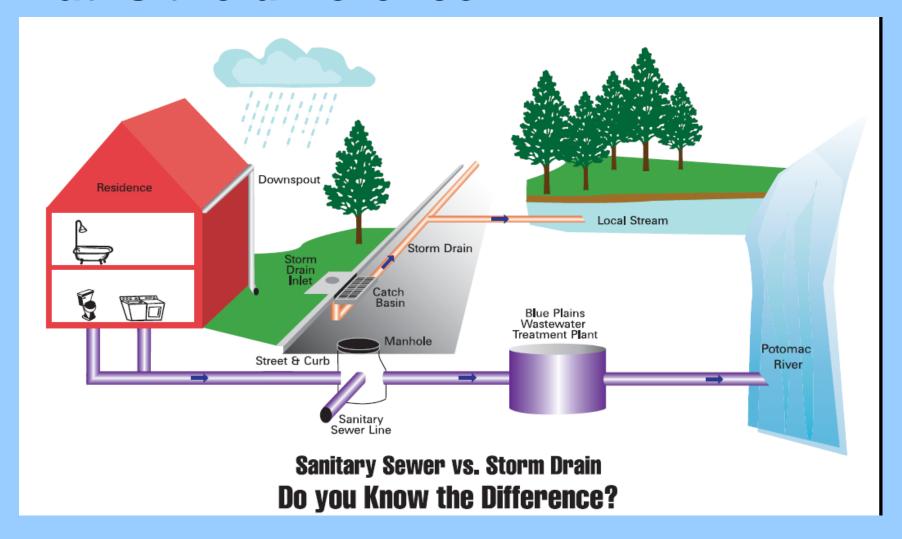
- Flooding
- Erosion
- Sedimentation
- Pollutant transport
- Decreased baseflow







Sanitary Sewers and Storm Drains: What is the difference?



What is Conservation Landscaping?



"Landscaping with specific goals of reducing pollution and improving the local environment."

Why Conservation Landscaping?



A. English

- Reduces pollution of our air and water
- Conserves nonrenewable resources such as fuel and water
- Helps maintain regional biodiversity
- Helps eradicate nonnative invasive species

The Gardening-Stormwater Connection

By trapping some of the water coming off of your property you can help prevent damaging:

- Erosion
- Sedimentation
- Pollutant transport

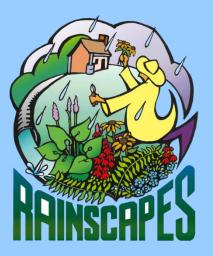






Rockville's RainScapes Rewards Guidelines and Criteria for Project Eligibility

- Planted area (turf or non-native invasive plants) to be converted must be at least 250 square feet*
- Three-inch mulch layer required
- No plastic sheeting
- A planting plan
- NO non-native invasive plants
- ¾ must be native

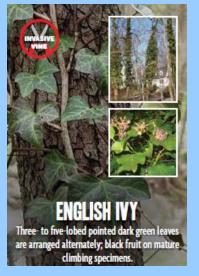


*need not be contiguous

Plant Language

- Native: Any plant that historically grew in this REGION.
- Alien/Non-Native: plants that occur outside their natural range boundaries (most often is mediated by humans either deliberately or unintentionally).





Invasive species means an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health. Executive Order 13112

Why go native?



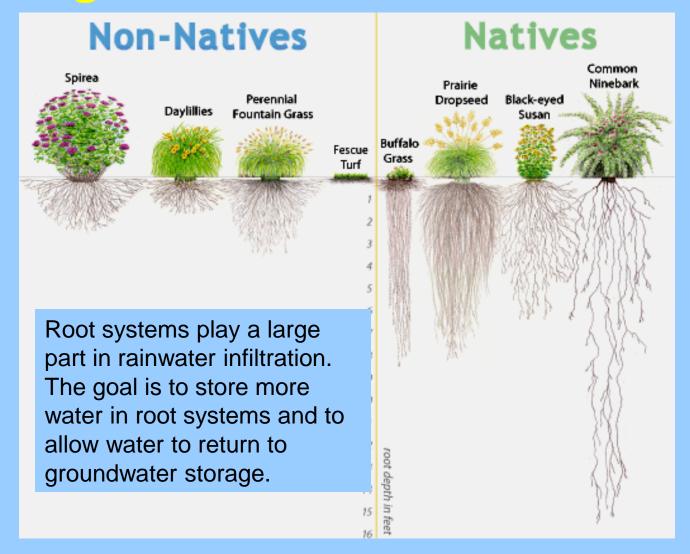
Native plants:

- are more adaptable to local climate and soils → less maintenance
- are more resistant to insects and disease → less pesticides which run off lawns and contaminate local waterways

- attract and sustain more wildlife
- can help to prevent erosion and pollution by stabilizing the soil and slowing the flow of rainwater runoff



Getting to the Root of the Problem



Obtaining Native Plants



Photo: Goodman/ Farrelly

 Local nurseries and some big box stores (Home Depot and Lowes) are carrying more natives.

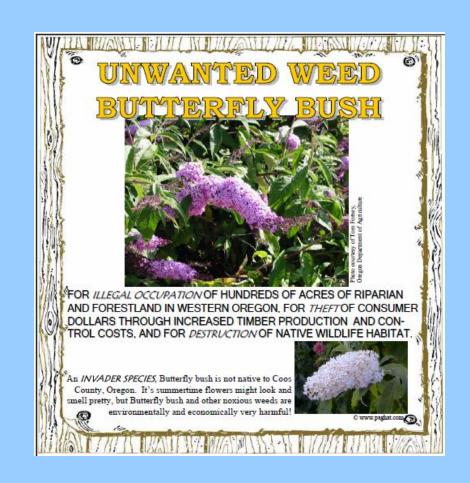
Ex: "BayScapes"

- Where possible, select species native to this region not just U.S.
- Native plants should never be removed from the wild unless an area is about to be developed
- Remember... once established, native plants will reduce your labor and maintenance costs and invite wildlife to your yard



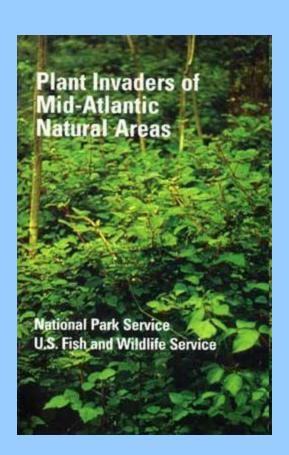
Why all the negative talk about Non-Native Invasive Plants (NNIs)?

- Competes with native plants for water, pollinators, nutrients and sunlight.
- Lack natural predators that keep them in check in their native home.
- Very difficult to control, but possible through educating the public on their identification and Best Management Practices for removal.



Invasives: The Sinister Seventeen

- Foliage Five herbaceous plants
- Flowery Four woody plants with several stems
- Odorous One tree
- Sinewy Seven vines that support themselves by climbing, twining, or creeping along a surface



The Foliage Five



Japanese knotweed
Polygonum cuspidatum
Britt Slattery, USFWS



lesser celendine Ranunculus ficaria Jil Swearingen, NPS



Japanese stilt grass
■Microstegium vimineum
Ted Bodner



Canada thistle
Cirsium arvense
Britt Slattery, USFWS



garlic mustard

Alliaria petiolata

Britt Slattery, USFWS

Alternatives: Native Herbaceous Plants



obedient plant Physostegia virginiana



New York fern Thelypteris Noveboracensis



wild geranium Geraniums maculatum



foam flower Tiarella cordifolia



creeping phlox Phlox stolonifera

The Flowery Four:





autumn olive

Elaeagnus umbellata





wineberry
Rubus
phoenicolasius
Britt Slattery, USFWS
Jil Swearingen, NPS







bush honeysuckle
Lonicera spp.
James L. Reveal
John M. Randall, TNC
USDA, NRCS





multi-flora rose Rosa multiflora James H. Miller

Alternatives: Native Shrubs



winterberry

llex verticillata

Chris Miller, NRCS



spicebush *Lindera benzoin*



gray dogwoodCornus racemosa
Britt Slattery, USFWS



sweet pepperbush Clethra alnifolia USFWS



red or black chokeberry Aronia arbutifolia or melanocarpa Britt Slattery, USFWS



arrowwoodViburnum dentatum
Britt Slattery, USFWS

The Sinewy Seven:



English Ivy Hedera helix USDA, NRCS



Japanese Honeysuckle Lonicera japonica J.D. Ruffner, USDA



Celastrus orbiculatus



Kudzu Pueraria montana **David Moorhead**



mile-a-minute vine Polygonum perfoliatum Britt Slattery, USFWS



winter creeper Euonymus fortunei James H. Miller



porcelain berry Ampelopsis brevipedunculata Jil Swearingen, NPS

Alternatives: Native Vines



trumpet honeysuckle
Lonicera sempervirens
Britt Slattery, USFWS



virgin's bower Clematis virginiana Britt Slattery, USFWS



passionflower
Passiflora incarnata
R. Harrison Wiegand



trumpet creeper *Campsis radicans*

The Odorous One:





Tree of Heaven
Ailanthus altissima
Paul Wray



*Other invasive trees: DO NOT PLANT

- •Bradford Pears (Pyrus calleryana Bradford cultivar and others)
- Norway Maple (Acer platanoides)
- Princess Tree (Paulownia tomentosa)

Alternatives: Native Trees



redbud
Cercis canadensis
Britt Slattery, USFWS

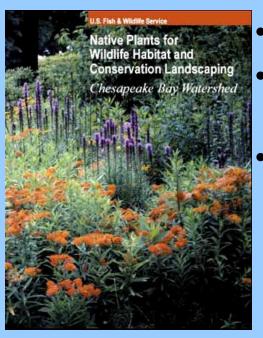


fringe treeChionanthus virginicus
R. Harrison Wiegand



serviceberry
Amelanchier canadensis
Chris Miller, NRCS

How to Use the Guide



- Plant Names and Types
- Groundcovers: PLEASE consider the plants listed as <u>GC</u> in notes
- Characteristics
 - Height
 - Flowers: bloom period and flower color
 - Fruit: fruiting period, color, and type
 - Fall Color
- Growth Conditions
- Habitat







Conservation Garden Templates

Piedmont Region Chesapeake Bay Watershed





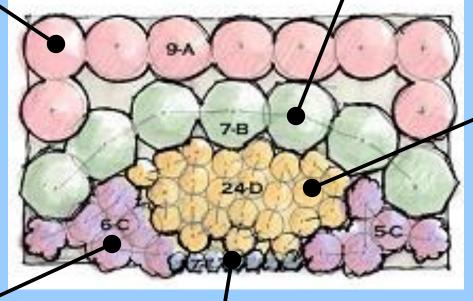
A. English

Shady Flower Garden



Clethra alnifolia sweet pepperbush

Rhododendron periclymenoides Pinxterbloom Azalea



Chrysogonum virginianum Green-and-Gold



Eurybia divaricataWhite Wood Aster



Phlox stolonifera Creeping Phlox





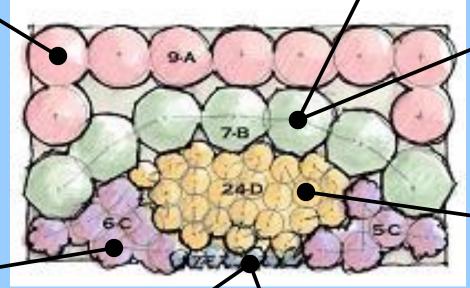
Sunny Flower Garden



Cephalanthus occidentalis
Buttonbush



Callicarpa americana American Beautyberry



Phlox subulata
Moss Phlox



Sedum seiboldi Stonecrop



Physocarpus opulifolius 'Diablo' Common Ninebark



Coreopsis verticillata
Threadleaf Coreopsis

Scale: 1/8"=1'



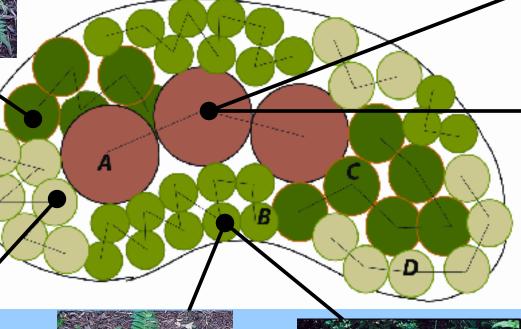


Shady Fern Garden

Lindera Benzoin Spicebush (6.5-16')



Thelypteris noveboracensis
New York Fern



llex glabra Inkberry (6-10')



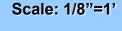
Osmunda cinnamomea
Cinnamon Fern



Polystichum acrostichoides Christmas Fern



Asarum canadense Wild Ginger





Sunny Low Maintenance & Deer "Resistant" Garden



Betula nigra
River Birch



Aster novae-angliae
New England Aster

Aesclepias tuberosa
Butterfly Weed



Monarda didyma Bee Balm



10-B

Clethra alnifolia 'Ruby Spice' Summersweet



Solidago nemoralis Dwarf Goldenrod

Scale: 1/8"=1'



Sunny Butterfly Garden



Verbena hastata Blue Vervain



Aesclepias
Tuberosa
Butterfly Weed



Muelenbergia
capillaris 'Lenca'
Regal Mist
(Courtesy of Monrovia.com)



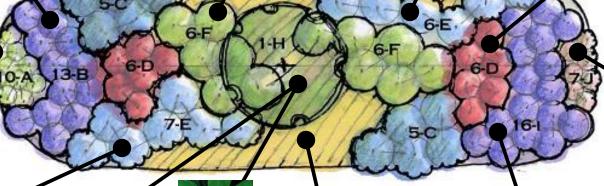
Eupatorium fistulosum Joe-Pye Weed



Lobelia cardinalis Cardinal Flower



Chelone Glabra Turtlehead



52-G

Amsonia hubrechtii
Blue Star
(Courtesy of North Creek Nursery)



Betula nigra River birch



Magnolia grandiflora Southern Magnolia



Carex stricta
Tussock Sedge



Aster novi- belgii New York Aster

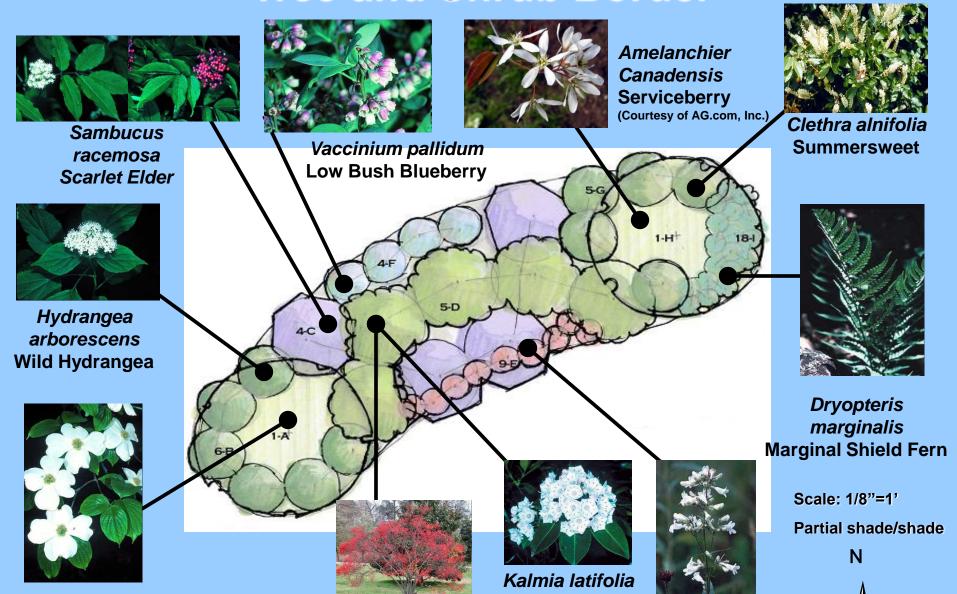


Chelone Iyonii Shellflower (Courtesy of Anne English)

Scale: 3/32"=1'



Tree and Shrub Border



Flowering Dogwood Winterberry (need male pollinator) Mountain Laurel Penstemon laevigatus

Smooth Beardtongue

Designing a Conservation Landscape

- Perform a site analysis.
- Choose your goals and consider any specific needs related to those goals.
- Environmental Features

Look to **nature** for inspiration.

Create a wild life habitat...pond, pollinator dish or bird bath.

Improve water quality...reduce impervious surfaces, create a rain garden or design in a space for a rain barrel.

Perform a Site Analysis

 Create a scale drawing/base plan of the permanent features on your properties using the map provided. Include: walkways, buildings, lights, water sources and existing beneficial plants that you want to keep.

REMEMBER, you must factor in utility right-of-ways (sewer, water, etc.— call MISS Utility 800-257-7777 before you dig!)

A good site analysis also includes noting the following:

- existing vegetation
- views
- noise issues
- privacy
- sun/shade and microclimates
- drainage
- soil conditions*



*Conduct a soil test and/or look up soil conditions
http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm

Conservation Landscape Planning: Goals

Your goals may contain multiple environmental benefits as well as benefits that are not specifically related to the environment, but can be accomplished in an environmentally sound way. Some common examples of landscape goals would be:

- To screen an unsightly view;
- To create pollinator habitat;
- To strive for low maintenance;
- To provide a safe environment for toddlers

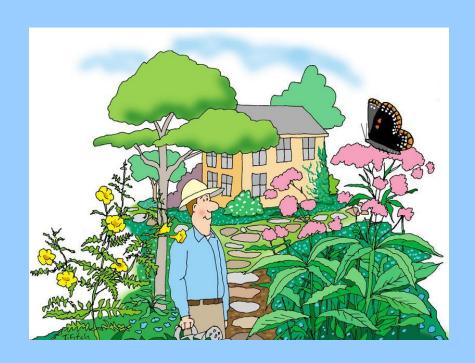


Inspiration: Take a Nature Hike

Go outside and explore your favorite natural spaces. If possible, try to observe your favorite sites in various seasons.

Take notes about:

- The composition of the space
- The natural plant communities
- Soil conditions
- Sunlight conditions
- Plant textures
- Temperature niches
- Wind direction
- Color mixtures
- Habitat uses
- What draws you to the site?



Turf Removal and Disposal

The City of Rockville is asking you to remove turf... But how?

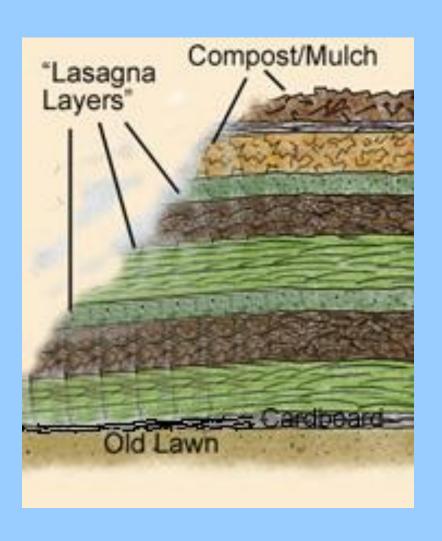








Sheet or "Lasagna" Gardening



- Cardboard or newspapers.
- Two to three inches of moist topsoil or peat moss
- Four to eight inches compost materials (grass clippings, leaves, manure, coffe grounds hay, etc.)
- Repeat layers of peat moss and compost materials
- Spread four inches of mulch on top

Sheet or "Lasagna" Gardening

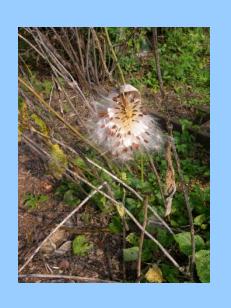


- Easier, but slower
- Less labor
- Can help amend soils

- Low cost
- Uses household materials



Volunteer Opportunities



- Adopt-a-Stream
- Save Our Streams Citizen
 Monitoring Effort
- Storm drain marking
- Invasive plant pulls (Weed Warriors)
- Environment Commission

Before and After



Invasive plants and weedy lawn dominate.



The new bed includes columbine, moss phlox, black-eyed Susan, butterfly milkweed, and little bluestem grass.

Before and After





Before and After (1st year)





Spring and Summer





*2 years after install

Questions Raffle Evaluations



Courtesy Goodman/Farrelly